

**Review of Emission Limitations and
Standards for the Revised 2012 PM_{2.5}
National Ambient Air Quality Standard**

Report to the Governor and General Assembly

Iowa Department of Natural Resources

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Executive Summary

In 2012 the U.S. Environmental Protection Agency (EPA) adopted revisions to the ambient air quality standards for fine particulate matter less than or equal to 2.5 microns in diameter (PM2.5). These revisions were made to strengthen the ambient air quality standards for this pollutant in order to adequately protect public health.

To fulfill the requirements of Iowa Code 455B.134(14), the Department of Natural Resources (DNR) convened meetings with stakeholders during 2014 to review emission limitations and standards related to the maximum amounts of PM2.5 that can be emitted from sources of this air pollutant in Iowa. No changes to Iowa Code were identified by stakeholders or the DNR as necessary for the attainment of the revised PM2.5 NAAQS. The stakeholders and DNR also concluded that no rulemaking to amend existing administrative rules related to thresholds that trigger air permitting of sources of PM2.5 was necessary.

This report to the Governor and Iowa General Assembly summarizes the DNR's activities related to the provisions of Iowa Code 455B.134(14).

Revised Ambient Air Quality Standards

Under the Clean Air Act (CAA), EPA is required to establish health based standards for criteria pollutants, which include PM2.5. These health based standards are referred to as the National Ambient Air Quality Standards (NAAQS). The NAAQS establish maximum permissible airborne pollutant concentrations. The CAA requires EPA to review the latest scientific information and health studies for each criteria pollutant at least every five years. EPA revises existing NAAQS or promulgates new NAAQS for a given criteria pollutant as appropriate based on this review.

On December 14, 2012, EPA promulgated revisions to the PM2.5 NAAQS to strengthen the standard in order to adequately protect public health. Specifically, EPA revised the existing annual PM2.5 NAAQS from 15 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) to $12 \mu\text{g}/\text{m}^3$. The 24-hour PM2.5 NAAQS ($35 \mu\text{g}/\text{m}^3$) was not changed.

PM2.5 can exist in the atmosphere as microscopic solids or liquid droplets. The small size of PM2.5 (smaller than a red blood cell) allows PM2.5 to bypass the body's normal protections and may lodge in the lungs causing scarring and decreased lung function. PM2.5 may also pass into the blood stream and contribute to plaque buildup in arteries, increase the risk for and effects of heart disease, and enter the organs and the nervous system, including the brain. Numerous scientific studies have linked PM2.5 exposure to a variety of health problems, including increases in respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing, decreased lung function, aggravated asthma, the development of chronic bronchitis, irregular heartbeat, heart attacks and premature death.

PM2.5 is generated by all types of combustion: motor vehicles, power plants, wood burning and some industrial processes. Most PM2.5 is formed when nitrogen oxides or sulfur dioxide react with ammonia in the atmosphere to form secondary PM2.5.

Stakeholder Meetings

To fulfill the requirements of Iowa Code 455B.134(14), the DNR solicited input from stakeholders at its quarterly Air Quality Client Contact meetings regarding the need for possible law changes to implement the revised PM2.5 NAAQS. The DNR conducted these meetings on March 6, 2014, and May 22, 2014.

During the March 6, 2014, meeting, stakeholders were given a presentation on the revised PM2.5 NAAQS and the DNR's plans and timelines for implementing the revised NAAQS. Nineteen stakeholders participated in the meeting. The information provided in the presentation is posted on-line at <http://www.iowadnr.gov/idnr/InsideDNR/BoardsCommissions/AirQualityClientContactMtg.aspx>. Stakeholders were specifically requested to bring forward at the May 22, 2014, Air Quality Client Contact meeting any changes to laws, administrative rules, and forms and guidance that may be necessary to implement the revised PM2.5 NAAQS. Eighteen stakeholders participated in the May 22 meeting.

No changes to laws, administrative rules, or forms and guidance, related to emissions limitations or standards, were identified by stakeholders as necessary to implement the revised PM2.5 NAAQS. Reviews conducted by DNR and reported to stakeholders concluded that no rulemaking to amend existing administrative rules related to thresholds that trigger air permitting of sources of PM2.5 was necessary.

Statutory Requirements

The DNR has traditionally requested stakeholder input when implementing a new or revised ambient air quality standard. This approach was codified in 2010 in Iowa Code 455B.134(14), which instructs the DNR to convene meetings to review emission limitations or standards relating to the maximum quantities of a pollutant that can be emitted from a source. The statute reads as follows:

14. Convene meetings not later than June 1 during the second calendar year following the adoption of new or revised federal ambient air quality standards by the United States environmental protection agency to review emission limitations or standards relating to the maximum quantities of air contaminants that may be emitted from any air contaminant source as provided in section 455B.133, subsection 4. By November 1 of the same calendar year, the department shall submit a report to the governor and the general assembly regarding recommendations for law changes necessary for the attainment of the new or revised federal standards.

Subsection 4 of section 455B.133 specifies the duties of the Environmental Protection Commission regarding adopting emission limitations or standards for the maximum quantities of air pollutants, such as PM2.5, that may be emitted from a source. The subsection also includes provisions on alternative means of emissions limitation, such as design, equipment, material, work practice or operational standards. The statute reads as follows:

4. Adopt, amend, or repeal emission limitations or standards relating to the maximum quantities of air contaminants that may be emitted from any air contaminant source. The standards or limitations adopted under this section shall not exceed the standards or limitations promulgated by the administrator of the United States environmental protection agency or the requirements of the federal Clean Air Act as amended through January 1, 1991. This does not prohibit the commission from adopting a standard for a source or class of sources for which the United States environmental protection agency has not promulgated a standard. This also does not prohibit the commission from adopting an emission standard or limitation for infectious medical waste treatment or disposal facilities which exceeds the standards or limitations promulgated by the administrator of the United States environmental protection agency or the requirements of the federal Clean Air Act as amended through January 1, 1991. The commission shall not adopt an emission standard or limitation for infectious medical waste treatment or disposal facilities prior to January 1, 1995, which exceeds the standards or limitations promulgated by the administrator of the United States environmental protection agency or the requirements of the federal Clean Air Act, as amended

through January 1, 1991, for a hospital, or a group of hospitals, licensed under chapter 135B which has been operating an infectious medical waste treatment or disposal facility prior to January 1, 1991.

a. (1) The commission shall establish standards of performance unless in the judgment of the commission it is not feasible to adopt or enforce a standard of performance. If it is not feasible to adopt or enforce a standard of performance, the commission may adopt a design, equipment, material, work practice or operational standard, or combination of those standards in order to establish reasonably available control technology or the lowest achievable emission rate in nonattainment areas, or in order to establish best available control technology in areas subject to prevention of significant deterioration review, or in order to adopt the emission limitations promulgated by the administrator of the United States environmental protection agency under section 111 or 112 of the federal Clean Air Act as amended through January 1, 1991.

(2) If a person establishes to the satisfaction of the commission that an alternative means of emission limitation will achieve a reduction in emissions of an air pollutant at least equivalent to the reduction in emissions of the air pollutant achieved under the design, equipment, material, work practice or operational standard, the commission shall amend its rules to permit the use of the alternative by the source for purposes of compliance with this paragraph with respect to the pollutant.

(3) A design, equipment, material, work practice or operational standard promulgated under this paragraph shall be promulgated in terms of a standard of performance when it becomes feasible to promulgate and enforce the standard in those terms.

(4) For the purpose of this paragraph, the phrase "*not feasible to adopt or enforce a standard of performance*" refers to a situation in which the commission determines that the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations.

b. If the maximum standards for the emission of sulfur dioxide from solid fuels have to be reduced in an area to meet ambient air quality standards, a contract for coal produced in Iowa and burned by a facility in that area that met the sulfur dioxide emission standards in effect at the time the contract went into effect shall be exempted from the decreased requirement until the expiration of the contract period or December 31, 1983, whichever first occurs, if there is any other reasonable means available to satisfy the ambient air quality standards. To qualify under this subsection, the contract must be recorded with the county recorder of the county where the burning facility is located within thirty days after the signing of the contract.

c. The degree of emission limitation required for control of an air contaminant under an emission standard shall not be affected by that part of the stack height of a source that exceeds good engineering practice, as defined in rules, or any other dispersion technique. This paragraph shall not apply to stack heights in existence before December 30, 1970, or dispersion techniques implemented before that date.

Iowa Code Changes

From the stakeholder meetings summarized above and DNR's own internal review, no changes to Iowa Code were identified that would be necessary for the attainment of the revised PM2.5 NAAQS.